

A man in a flight suit and goggles is looking at a radar screen. The image is heavily blurred, suggesting motion or a fast-paced environment. The man is wearing a flight helmet with goggles, and the background is dark with glowing green and blue lights from the radar equipment.

Buying Tools for Fighting Teams

A Story with a Happy Ending:
Part 1

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Once upon a time, in a land so much like our own nobody could tell them apart, a Small Elite Amphibious Fighting Team realized they had a problem. The SEAFT was sent to far places to discuss things with people who didn't like to listen. Although it sometimes led to fights, it wasn't something the team worried about very much—they were trained to accept that sort of situation and were provided with tools to help them, but mostly they had a lot of desire to do well in every situation.

This story came about because the SEAFT was using a portable combat radar system to help them find people—people who were trying to find them first. Although the radar still did the things it had always done, the world was changing quickly all around them, and the team's radar was very old. In fact, the team hadn't upgraded their radar technology since the days of DOS, the Commodore 64, or the Commodores, for that matter. The radar

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struggled valiantly to perform capably in the mobile, lethal, integrated fashion the SEAFT expected from their warfighting tools in the new era of joint enterprise electronic network operations. But it just couldn't keep up.

Building a Better Radar

The SEAFT wasn't the kind of fighting team that sat around worrying about the problem. They decided they had to do something about it. So they set out to design, develop, produce, and deliver a new radar to their fighting team to help them vanquish their nation's enemies even better than before.

The SEAFT Headquarters put their finest analysts to work examining the technology upgrades needed for the radar to perform with the modern capability they wanted to achieve. The more the analysts learned, the more they discovered it was going to be a hard job, as many things had changed since bell bottoms swung freely across their land. They worked to understand everything about developing the new radar. The analysts completed a rough estimate of the money they would need to deliver the new radar into the capable hands of the young men and women who would use it to help defeat their nation's enemies with the swiftness and thoroughness so admired in their land. Unfortunately, because it had been so long since the SEAFT had last upgraded their radar technology, they were not certain they understood everything they needed to do to design and develop the new, improved radar. Many of the first designs and estimates were fraught with risk and uncertainty, but the SEAFT analysts attacked the problem with the vigor and enthusiasm that had made them famous in the first place, and the unknown values were slowly filled in.

As the SEAFT HQ made progress towards understanding all that was necessary to deliver the radar, they also started to understand how much it would really cost to do the work and to see that the expected costs were becoming larger and larger. Eventually the costs became so high that the analysts of the SEAFT realized their young men and women could more effectively kill the enemies of their nation if they spent their money on different tools rather than fund the new radar.

So they abandoned their radar development efforts. But they kept their notes in a safe place, just in case. They admired the portability and capability of the new radar. Maybe one day, things might work out differently.

That was almost the end of my story about the radar—but not quite.

We Had Our Eyes on That

One of the other fighting teams from the same nation that employed the SEAFT, the Above Low Objects Fighting Team (ALOFT), had been following the new radar development, and they also admired it greatly. You might even say the

ALOFT coveted it. You see, they also had not built a radar with new technology since way back when. Since the SEAFT was no longer leading the development of the new radar, the ALOFT decided to take over the development themselves.

The ALOFT had a larger budget for new radar and a great dependence on technology to accomplish their lofty mission. The ALOFT assigned the task of developing the new radar to their professionals whose job it was to deliver new tools to warfighting teams. The professionals were very experienced and knew exactly what to do, so they set right to work on their tasks. First they called friends who used to work with them but were now working in really well-paying jobs with specialized defense contractors, and they asked their friends how much they thought the new radar might cost to develop.

This reflexive step was so routine it had its own name and its own acronym—the truest measure of success in this business. It is called an RFI, or request for information. (It may not sound like much, but let me tell you that once you get your own acronym, you are really something, and your acronym will soon be rolling off the tongues of some very influential people!) The contractors, who were not experts in this business for nothing, asked the professionals how much money the ALOFT were willing to spend on developing a great new radar like the one they'd described.

Plowing Through the Paperwork

Fortunately, the SEAFT had been very willing to share their notes with the ALOFT, so the ALOFT could quickly start to fill in more of the blanks and unknown parts from the original estimate. They talked closely with their friends in the defense contracting business, and they started to agree on an idea of how much the new radar might cost. Unsurprisingly to some of the more experienced people in the ALOFT's professional tool-buying program (who in no way should be called jaded), the contractors' estimates came in very close to the amount of money available to be spent by the ALOFT on a new radar.

Good progress was now being made, and much of the risk and uncertainty from the original estimate was being solved—so much of it, in fact, that it was time to get approval to make this into a formal tool-acquisition program!

Well, in order for the ALOFT to get approval, which would be done in several phases, a lot of words had to be written and a lot of vital charts had to be created. The professional ALOFT tool buyers jumped right on the job because they were very good at words and charts. They'd had a lot of practice, thanks mostly to the many, many layers of important offices of necessary supervision and review between them and any person with the authority to make a big decision about expensive purchases.

They separated the tool development program into research and development, production, and sustainment phases. Then they documented the steps necessary for each part,

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carefully filling out the vital charts with bright colors, arrows, dates, figures, names, office symbols, and even embedded videos (they weren't professionals for nothing, as was evident from looking at those charts) that clearly showed how much each part and each step in the long journey would cost to accomplish. The vital charts made very impressive viewing on screens in big conference rooms, and the ALOFT sent them to many interested people in all manner of organizations that liked to know what was new in the professional tool-buying world. They conducted many IPTs (Interesting Public-funded Trips), and continued to work feverishly to get approval from their bosses all the way up to the headquarters of the ALOFT in their nation's capital! It was an exciting time for those involved with the new radar.

Now to help the reader who may not be a professional tool-buyer appreciate how much risk and uncertainty is associated with the development of a new tool, let me explain.

One way to assess the risk and uncertainty in a new program is to see how much research, development, test and engineering (RDT&E) effort is allocated in the early phases of the tool development. If a new system or product is more or less a finished product that just needs to be put into a fighting team's inventory system and shipped to the young men and women in theater, there may be no or very little RDT&E necessary. (Professional tool buyers call that off-the-shelf technology; the people who own the tools call it proprietary. Both are interesting terms, but that is another story).

On the other hand, if a fighting team has to invent something new, something that has never been done before, there can be quite a bit of RDT&E necessary to get the tool ready for production, delivery, and integration with other existing tools. So, from now on, as a way to represent how sure the ALOFT is about what they are about to develop, I'm just going to talk about the RDT&E money planned for the new radar. I hope that will make it simpler to follow. Just remember: RDT&E money is a symbol of the risk and uncertainty

associated with the development of the new radar (or any new tool, for that matter).

What's it Cost? Well, How Much Do You Have?

After the tool-buying professionals identified the steps needed in each phase, they also had to identify how much it would all cost. After sufficient and necessary supervision and review and a few IPTs, the ALOFT chief tool buyer or a very important deputy would formally approve the start of the process to do actual work, and by "actual work," we mean, of course, to advertise the new radar as an opportunity for a defense tool maker to compete for the contract to do the work, while being supervised by the staff of the lucky professional tool buyer chosen to lead the project. Then the ALOFT HQ would put enough additional funding into the tool buyers' accounts to do the work and successfully deliver the new radar to the warfighting teams all over the world—who, in truth, were still using their very old radar for find their nation's enemies—albeit with increasing effort, as they struggled to keep up with at least 20 years of very impressive progress in the electronics world, such as texting, Twitter, instant messaging, Facebook—not to mention frequency hopping, jamming, and Direct TV.

Now the ALOFT did an excellent job of identifying the problems they would have to solve to reduce the risk and uncertainty that was part of making a 20-year leap in radar technology. Their program analysts had a lot more information to work with than the analysts of the SEAFT ever had. As you might suspect, the ALOFT analysts came up with a different answer—and their answer was a big number—beyond what was in the ALOFT budget to develop the radar. The number was big because they had better information and because (unlike the contractors whose opinions were first sought) they didn't have a vested interest in competing for the chance to develop a new radar for the ALOFT. What that means is they weren't risking losing money from the new work by estimating more than the ALOFT had to spend on the new radar.

The professional tool buyer had a problem—a big problem—because without enough funds set aside (and it was a long and difficult process to get those funds), the development couldn't go any further. The experts he relied on to give him the best possible information on which to make a sound decision about spending his nation's scarce resources had given him a number that didn't fit into his tool-buying plan, and he was going to have to make changes or ask permission all the way up through the many, many layers of important offices of necessary supervision and review to get more money to develop the new radar.

That was a BIG problem ... and you can find out how it was solved in the next issue of *Defense AT&L*.

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